

Claims:

1. A composite material comprising PPTA (poly-p-phenyleneterephthalamide) and nanotubes having an aspect ratio of at least 100 and a cross-sectional diameter of 5 nm or less, the composite material containing up to 12 wt.% of nanotubes, obtainable by adding the nanotubes to sulfuric acid, decreasing the temperature to solidify the mixture, adding PPTA to the solid mixture, heating to above the solidifying point and mixing the mixture, and spinning, casting, or molding the mixture to the composite material.
- 10 2. The composite material of claim 1 wherein the nanotube is a single wall nanotube (SWNT).
- 15 3. The composite material of claim 1 or 2 wherein the content of nanotubes is 5 wt.% or less.
4. The composite material of any one of claims 1-3 having a tensile strength of at least 1,5 GPa and a modulus of at least 50 GPa.
- 20 5. The composite material of claim 4, wherein the composite material is a fiber.
- 25 6. A process for making a spin dope solution comprising the steps:
 - a) adding nanotubes having an aspect ratio of at least 100 and a cross-sectional diameter of 5 nm or less to sulfuric acid at a temperature above the solidifying point of the sulfuric acid;
 - b) decreasing the temperature to below the solidifying point of the sulfuric acid and mixing for a sufficient time to solidify the mixture;
 - c) adding PPTA to the solid mixture; and
 - d) heating to above the solidifying point and mixing the mixture.
- 30 7. The process according to claim 6 wherein in step a) the mixture is mixed for 10 min to 6 h at 10 to 90° C.
8. The process according to claim 6 or 7 wherein the temperature is decreased in step b) to 7 to -20° C, preferably to 2 to -12° C.

9. The process according to any one of claims 6 to 8 wherein the temperature in step c) is maintained at -5 to 0° C prior to adding PPTA to the mixture.

10. The process according to any one of claims 6 to 9 wherein the temperature in
5 step d) is elevated to ambient temperature and the mixture is mixed for at least 1 h.

11. A multifilament fiber obtainable by spinning the spin dope obtained according to
10 claim 6, characterized in that the fiber comprises at least 5 filaments.

12. A fiber having filaments comprising a mixture of PPTA and nanotubes,
characterized in that the fiber is a multifilament fiber comprising at least 5
filaments and the nanotubes have an aspect ratio of at least 100 and a cross-
sectional diameter of 5 nm or less.